REMARKS

CANCELLATION OF NON-ELECTED CLAIMS

In view of the election of Group I in Paper No. 24, claims 17-23 are hereby cancelled without prejudice or disclaimer.

CLAIM OBJECTIONS

Claim 16 was objected to under 37 CFR 1.75(c) as being of improper dependent form. Withdrawal of this objection is requested in view of the claim amendment to claim 16.

35 U.S.C. 101 REJECTION

Claims 1-16 were rejected under 35 U.S.C. 101 as being directed to a non-statutory subject matter. Withdrawal of this rejection is requested in view of the claim amendments thereto.

35 U.S.C. 112 REJECTIONS

Claims 1-16 were rejected under 35 U.S.C. 112, first paragraph, as being non-enabling. Claims 1-16 were also rejected under 35 U.S.C. 112, second paragraph, as being indefinite. Withdrawal of this rejection is requested in view of the claim amendments thereto.

35 U.S.C. 102 REJECTION

Claims 1, 5, 12 and 14 were rejected under 35 U.S.C. 102(b) as being anticipated by **Takagi** (U.S. Pat. No. 5,160,522). This rejection is traversed.

Claim 1 recites a manufacturing method of an optical fiber having one or more holes extending along the axis comprising a first step for forming said one or more holes in a preform, a second step for heating the preform and drying the inside of the holes, and a third step for drawing the preform into an optical fiber, wherein said third step comprises controlling a pressure of a gas in said one or more holes in said preform using a pressure-controlling device.

Takagi do not identically teach, *inter alia*, a step for drawing the preform into an optical fiber, wherein this step comprises controlling a pressure of a gas in said one or more holes in said preform using a pressure-controlling device.

Instead, **Takagi** teaches processes and structure relating to polarizing maintaining fibers (PMFs), whereas the present disclosure relates to holey fibers (HFs). In the **Takagi** PMFs, the holes in the preform contain stress members 3, and the gaps between the outer surface of the stress members and the inner surface of the holes are subjected to a vacuum and are then collapsed before or during the drawing so that the fiber does not have holes filled with gas. This absence of a gas in the holes in the preform is admitted by the Examiner, who cites **Takagi** as teaching application of vacuum, which "withdraws all gases including water vapor" (page 6 of the March 31, 2004 Office Action). Accordingly, **Takagi** does not teach (or suggest) "controlling a pressure of a gas" in the manner claimed.

It is further noted that the Examiner's interpretation of the "holey fibers" to include holes that are filled with a medium inclusive of non-gases, such as solid mediums, is erroneous and inconsistent with Applicant's specification. The words of a claim must be given their plain meaning (i.e., they must be read as they would be interpreted by those of ordinary skill in the art. *In re Sneed*, 710 F.2d 1544, 218 USPQ (Fed. Cir. 1983)). The "broadest reasonable interpretation" of the claims permitted by law must be consistent with "the interpretation that those skilled in the art would reach." *In re Cortright*, 165 F.3d 1353, 1359, 49 USPQ2d 1464, 1468 (Fed. Cir. 1999). In this vein, "[c]laims are not to be read in a vacuum, and limitations therein *are to be interpreted in light of the specification in giving them their 'broadest reasonable interpretation'*." *In re Marosi*, 710 F.2d 799, 802 (Fed. Cir. 1983)(*italics added*). It is submitted, therefore, that one skilled in the art would not have reasonably interpreted the term "holes" in, for example, "optical fibers having

one or more holes extending along the axis" (preamble) or "wherein said third step comprises controlling a pressure of a gas in said one or more holes in said preform using a pressure-controlling device" (claim 1) as being filled with a solid medium, as alleged by the Examiner, in view of the specification.

35 U.S.C. 103(A) REJECTION OF CLAIMS 6 AND 15

Claims 6 and 15 were rejected under 35 U.S.C. 103(a) as being unpatentable over **Takagi**. This rejection is traversed.

Claims 6 and 15 are asserted to be patentable at least by virtue of its dependence from claim 1. Claims 6 and 15 recite a manufacturing method of an optical fiber having one or more holes extending along the axis comprising a first step for forming said one or more holes in a preform, a second step for heating the preform and drying the inside of the holes, and a third step for drawing the preform into an optical fiber, wherein said third step comprises controlling a pressure of a gas in said one or more holes in said preform using a pressure-controlling device.

Takagi do not teach or suggest, *inter alia*, a step for drawing the preform into an optical fiber, wherein this step comprises controlling a pressure of a gas in said one or more holes in said preform using a pressure-controlling device. Instead, **Takagi** teaches processes and structure relating to polarizing maintaining fibers (PMFs), whereas the present disclosure relates to holey fibers (HFs). In the **Takagi** PMFs, the holes in the preform contain stress members 3, and the gaps between the outer surface of the stress members and the inner surface of the holes are subjected to a vacuum and are then collapsed before or during the drawing so that the fiber does not have holes filled with gas. This absence of a gas in the holes in the preform is admitted by the Examiner, who cites **Takagi** as teaching application of vacuum, which "withdraws all gases including water vapor"

(page 6 of the March 31, 2004 Office Action). Accordingly, **Takagi** does not teach or suggest "controlling a pressure of a gas" in the manner claimed.

Further, claim 6 recites the manufacturing method of an optical fiber having one or more holes extending along the axis comprising a first step for forming said one or more holes in a preform in accord with claim 1, wherein the preform is heated at a temperature equal to or higher than 800°C in the second step. The Examiner admits that **Takagi** does not teach heating to a temperature equal to or higher than 800°C. However, the Examiner contends that it "would have been obvious to heat to such a temperature because the softening temperature of glass is usually well above 800°C. It is submitted that use of a temperature higher than 800°C is not obvious since high temperatures promotes diffusion of water into glass, which is then difficult to remove. In the claimed method, the inventors found that in spite of such a possibility, a temperature above 800°C is effective.

The legal concept of *prima facie* obviousness is a procedural tool of patent examination, allocating the burdens of going forward with production of evidence in each step of the examination process (*citations omitted*)(*see, e.g.*, MPEP § 2142). The examiner bears the initial burden of factually supporting any *prima facie* conclusion of obviousness. A *prima facie* case of obviousness requires the examiner to present *evidence*, preferably in the form of some teaching, suggestion, incentive or inference in the applied prior art, *or in the form of generally available knowledge at the time of the invention*, that would have led one of ordinary skill in the art to combine the relevant teachings in the proposed manner to arrive at the claimed invention. *See, e.g., Ex parte Levengood*, 28 USPQ2d 1300 (Bd. Pat. App. & Inter. 1993); *Carella v. Starlight Archery*, 804 F.2d 135 (Fed. Cir. 1986

In the absence of any factual support, the Examiner merely offers an unsupported supposition of a fact to arrive at the alleged obviousness of the claimed subject matter. The Examiner's burden to set forth a *prima facie* case of obviousness has not been discharged, as the factual predicate has not been satisfied and broad conclusory statements, standing alone, are not "evidence" supportive of a *prima facie* showing. *McElmurry v. Arkansas Power & Light Co.*, 995 F.2d 1576, 1578 (Fed. Cir. 1993). To the extent that the Examiner may be implicitly relying upon "official notice," the Examiner may only take official notice of facts outside the record which are capable of *instant and unquestionable demonstration* as being "well-known" *in the art*. *In re Ahlert*, 424 F.2d 1088, 1091 (CCPA 1970). In view of Applicants' submission that the use of temperatures higher than 800°C undesirably promote diffusion of water into glass, the Examiner's supposition has not been shown to be premised upon what was well-known in the art at the time of the invention and is, accordingly, factually and legally insufficient to support a finding of obviousness.

In view of the above, it is submitted that the Examiner failed to establish a *prima facie* case of obviousness under 35 U.S.C. § 103(a). Withdrawal of this 35 U.S.C. § 103(a) rejection is requested for at least this reason.

35 U.S.C. 103(A) REJECTION OF CLAIMS 2-4, 6-7, 10-11 AND 13

Claims 2-4, 6-7, 10-11 and 13 were rejected under 35 U.S.C. 103(a) as being unpatentable over **Takagi** in view of **Yokota** (U.S. Patent No. 4,793,842). Reconsideration is requested.

Claims 2-4 and 10-11 require that the second step is performed "on a drawing tower while said holes having a closed end are filled with a dry gas; and the third step is performed on said drawing tower". Neither **Takagi** nor **Yokota** teach or suggest the use of a drawing tower in combination with the remaining aspects of the recited elements.

Claims 6 and 13 are asserted to be patentable at least by virtue of its dependence from claim 1. Claims 6 and 13 recite a manufacturing method of an optical fiber having one or more holes extending along the axis comprising a first step for forming said one or more holes in a preform, a second step for heating the preform and drying the inside of the holes, and a third step for drawing the preform into an optical fiber, wherein said third step comprises controlling a pressure of a gas in said one or more holes in said preform using a pressure-controlling device.

Takagi does not teach or suggest, *inter alia*, a step for drawing the preform into an optical fiber, wherein this step comprises controlling a pressure of a gas in said one or more holes in said preform using a pressure-controlling device. **Takagi** teaches holes in the preform which contain stress members 3, and the gaps between the outer surface of the stress members and the inner surface of the holes are subjected to a vacuum and are then collapsed before or during the drawing so that the fiber does not have holes filled with gas. This absence of a gas in the holes in the preform is admitted by the Examiner, who cites **Takagi** as teaching application of vacuum, which "withdraws all gases including water vapor" (page 6 of the March 31, 2004 Office Action). Accordingly, **Takagi** does not teach or suggest "controlling a pressure of a gas" in the manner claimed. **Yokota** teaches insertion of a glass rod core material 3 into a glass tube or lathe 1, whereupon the composite is preheated and the gap between the rod and the tube is filled with a gas and the gap is then collapsed (see, e.g., col. 4, lines 26-32). **Yokota** teaches that the heater 8 is moved along the rod and tube to collapse the gap (col. 5, lines 30-34). Therefore, **Yokota** also does not teach or suggest a step for drawing the preform into an optical fiber, wherein this step comprises controlling a pressure of a gas in said one or more holes in said preform using a pressure-controlling device.

To establish *prima facie* obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art. *In re Royka*, 490 F.2d 981 (CCPA 1974). "All words in a claim must be considered in judging the patentability of that claim against the prior art". *In re Wilson*, 424 F.2d 1382, 1385 (CCPA 1970); *see also In re Ochiai*, 71 F.3d 1565, 1572 (Fed. Cir. 1995)(*stating* "[w]hen evaluating the scope of a claim, every limitation in the claim must be considered"). Here, not all of the claim limitations are taught or suggested by **Takagi** nor **Yokota** and, whether taken singly or in combination, these references do not support a *prima facie* finding of obviousness at to the above claims. Withdrawal of this 35 U.S.C. 103 rejection is accordingly requested.

35 U.S.C. 103(A) REJECTION OF CLAIMS 1, 2, AND 7-9

Claims 1, 2 and 7-9 were rejected under 35 U.S.C. 103(a) as being unpatentable over **Berkey** (U.S. Patent No. 5,152,818). Reconsideration is requested.

Berkey discloses a method of making a polarization retaining single-mode optical fiber wherein longitudinal grooves are formed on opposite sides of a cylindrically-shaped core perform having a glass core surrounded by cladding glass, the core preform is inserted into a glass tube, the tube is shrunk onto the core preform, and the interface between the core preform and the tube is fused to form a solid preform having longitudinal apertures on opposite sides of the core (see Abstract). **Berkey** then teaches flowing of an etchant gas through the apertures to enlarge the apertures into holes having a substantially round cross-section, whereupon a stress rod formed of glass is inserted into each aperture and the resultant draw blank is drawn to form a single-mode optical fiber (see Abstract).

Claims 1, 2 and 7-9 recite a manufacturing method of an optical fiber having one or more holes extending along the axis comprising a first step for forming said one or more holes in a

preform, a second step for heating the preform and drying the inside of the holes, and a third step for drawing the preform into an optical fiber, wherein said third step comprises controlling a pressure of a gas in said one or more holes in said preform using a pressure-controlling device. **Berkey** decidedly does not teach or suggest, for example, drawing the preform into an optical fiber while controlling a pressure of a gas in said one or more holes in said preform using a pressure-controlling device.

As noted above, a *prima facie* case of obviousness requires that all the claim limitations must be taught or suggested by the prior art. *In re Royka, supra.* Here, not all of the claim limitations are taught or suggested by **Berkey**. Withdrawal of this 35 U.S.C. 103 rejection is accordingly requested.

To the extent necessary, a petition for an extension of time under 37 C.F.R. 1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account 500417 and please credit any excess fees to such deposit account.

Respectfully submitted,

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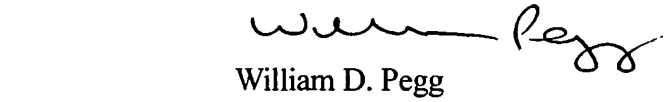

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